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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,190	12/30/2003	Carlos J. Gonzalez	SNDK.334US0	9150

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EXAMINER	
LI, ZHUO H	

ART UNIT	PAPER NUMBER
2185	

MAIL DATE	DELIVERY MODE
05/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/750,190	GONZALEZ ET AL.	
	Examiner	Art Unit	
	ZHUO H. LI	2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *10,11 and 14-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *10,11 and 14-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *2/26/08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This Office action is in response to amendment filed 2/26/2008. Accordingly, claim 10 was amended and claims 10-11 and 14-16 are pending for examination.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 2/26/2008 was filed after the mailing date of the final Office action on 12/10/2007. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukaida et al. (US Pub. 2003/0028704 hereinafter Mukaida) in view of Estakhri (US PAT. 6,721,843).

Regarding claim 10, Mukaida discloses a flash memory system (1, figure 1) having an array of non-volatile memory cells (figure 2) arranged in blocks as a unit of erase, pages therein as a unit of data programming and reading and planes of plurality of blocks are independently accessible (figure 4 and page 6, [0105] to [0108]), a method of operation comprising logically forming metablocks, i.e., virtual block, that individually include a block from a plurality of the planes (2-0 through 2-3, figure 6, page 7 [0116] to [0120]), sequentially receiving write commands with varying number of units of data and logically addresses of the individual units of data, i.e., sequentially read the content from the queue including number of units of data and logical addresses of the individual units of data during data write operation (page 9 [0164] and page 17 [0281]-[0286]), and writing all the data received with individual write commands by writing a given one or more units of data having consecutive logical addresses sequentially into pages within individual blocks of one of the planes (figure 22, page 10 [0176]-[0178], page 17 [0289] to [0297], and pages 20-20, [0345] to [0346], i.e., [0296] clearly teaches to sequential perform data write operation in response to the storage of the external write command by writing units of data sequentially into pages within individual blocks of only one of the planes). Mukaida differs from the claimed invention in not specifically teaching writing all the data received with individual write commands by writing a given one or more units of data having consecutive

logical addresses sequentially into pages within individual blocks and by writing more than said given number of units of data having consecutive logical addresses in parallel into pages within two or more blocks of one of the metablocks in two or more planes. However, Estakhri teaches a storing device, i.e., a flash memory, controlling method comprising the step of writing all the data received with individual write commands by writing a given one or more units of data having consecutive logical addresses sequentially into pages within individual blocks (col. 17 lines 25-35 and col. 17 line 65 through col. 18 line 8) and by writing more than said given number of units of data having consecutive logical addresses in parallel into pages within two or more blocks of one of the metablocks in two or more planes depending upon the amount of data received with the individual host write command (col. 17 lines 32-46 and col. 18 lines 23-48), in order to allow a traditional host to utilize the speed advantage of a multiple bank flash memory system. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mukaida in having the step of writing all the data received with individual write commands by writing a given one or more units of data having consecutive logical addresses sequentially into pages within individual blocks and by writing more than said given number of units of data having consecutive logical addresses in parallel into pages within two or more blocks of one of the metablocks in two or more planes, as per teaching of Estakhri, in order to allow a traditional host to utilize the speed advantage of a multiple bank flash memory system.

Regarding claim 11, Mukaida discloses the method further comprising writing an indication into non-volatile memory cell (i.e., cell #2351-0, figure 20) at the same time as the

received data that identifies the blocks into which the data are being written in parallel (page 16, [0275] to [0278]).

5. Claims 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mukaida et al. (US Pub. 2003/0028704 hereinafter Mukaida) in view of Otake et al. (US 2004/0030825 hereinafter Otake).

Regarding claim 14, Mukaida discloses a flash memory system (1, figure 1) having an array of non-volatile memory cells (figure 2) arranged in blocks as a unit of erase, pages therein as a unit of data programming and reading and planes of plurality of blocks are independently accessible (figure 4 and page 6, [0105] to [0108]), a method of operation comprising logically forming metablocks, i.e., virtual block, that individually include a block from a plurality of the planes (2-0 through 2-3, figure 6, page 7 [0116] to [0120]), sequentially receiving write commands with a number of sectors of data to be written into a single page, i.e., sequentially read the content from the queue including number of units of data and logical addresses of the individual units of data during data write operation (page 9 [0164] and page 17 [0281]-[0286]), writing all the received data in parallel into individual pages of individual blocks of only one of the sub-arrays in response to receiving the write commands with a number of one or more sectors for only a single page of data (figure 22, page 17 [0289] to [0297] and pages 20-20, [0345] to [0346], i.e., data extending over a plurality of page can be flash programmed simultaneously), and maintaining indications in the non-volatile memory cells that are associated with the written sectors of data as to whether the individual sectors have been written in logical sequence with other sectors in a single block (page 16, [0275] to [0278]). Mukaida differs from the claimed

invention in not specifically teaching the step of writing all the received data in parallel into pages within a plurality of blocks of at least one of the metablocks in a plurality of the sub-arrays in response to receiving the writing commands with a number of sectors of data for a plurality of pages and maintaining indication that are associated with the written sectors of data as to whether the individual sectors have been written in logical sequence with other sectors of data received with the same write command as the individual sector in a plurality of blocks of a metablock. However, Otake teaches a storing device control method for writing the received data in parallel into pages within a plurality of blocks of the at least one of the metablocks in a plurality of the sub-arrays (pages 2-3, [0036] to [0051] i.e., data for zm blocks are written on m pieces of flash memories in parallel depending upon the size of data received with individual host command) and maintaining indication that are associated with the written sectors of data as to whether the individual sectors have been written in logical sequence with other sectors in a plurality of blocks of a metablock (page 4, [0059] to [0064]). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify Mukaida in having the step of writing the received data in parallel into pages within a plurality of blocks of the at least one of the metablocks in a plurality of the sub-arrays and maintaining indication that are associated with the written sectors of data as to whether the individual sectors have been written in logical sequence with other sectors in a plurality of blocks of a metablock, as per teaching of Otake, because it improves the performance of writing in flash memories by decreasing evacuation in rewriting.

Regarding claim 15, Mukaida teaches a table is stored within the non-volatile memory cells and the sectors of data for a single page of data include data of the table (figure 25 and [age 18, [0308] to [0310]).

Regarding claim 16, Mukaida teaches to store the indications with their respective sectors of data as part of header thereto ([0308]).

Response to Arguments

6. Applicant's arguments with respect to claims 10-11 have been considered but are moot in view of the new ground(s) of rejection.

7. Applicant's arguments filed 2/26/2008 have been fully considered but they are not persuasive.

In response to applicant's argument that claim 14 is believed to patentable for the same reasons as set forth in claim 10, examiner respectfully disagreed because the scope of claim 10 is different from claim 14 in accordance with amendment filed 2/26/2008.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., the option of writing all the received data into pages of blocks of only one of the sub-array when tere is a small amount of data being written) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Furthermore, it is noted that Mulaida clearly teaches the steps of sequentially read the content from the queue including number of units of data and logical addresses of the individual units of data during data write operation (page 9 [0164] and page 17 [0281]-[0286]), writing all the data received in parallel into individual pages of individual blocks of only one of sub-arrays (figure 22, page 17 [0289] to [0297], the write data corresponding to each host address can be successively transferred to registers and then be stored in the prescribed page, i.e., page #17, simultaneously). The use of Otake is for teaching a storing device controlling method comprising the step of writing received data in parallel into pages within two or more blocks of one of the metablocks in two or more planes depending upon the amount of data received with the individual host write command (pages 2-3, [0036] to [0051], i.e., data for zm blocks are written on m pieces of flash memories in parallel depending upon the size of data received with individual host command). Thus, one skill in the art would recognize the combination of Mukaida and Otake teaches the claimed limitations as recited in claim 14.

In addition, the claimed language merely defined writing all the data received with individual write command in either first **or** second condition, such that any one of the condition as taught by the combination of Mukaida and Otake can read on the claimed limitations. Therefore, for these reasons, it is respectfully submitted that claim 14, and thus also its dependent claims 15-16, are rejected under the cited Mukaida and Otake references.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zhuo H. Li whose telephone number is 571-272-4183. The examiner can normally be reached on Tues - Fri 9:00am - 6:30pm and alternate Monday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah, can be reached on 571-272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Zhuo H. Li
Patent Examiner

/Sanjiv Shah/
Supervisory Patent Examiner, Art Unit 2185